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Research and innovation in sustainable forestry: lessons learnt to inform the policy making community

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Abstract - From an already rich experience of cooperation between scientists and policy makers in the framework of international research institutions such as the International Union of Forest Research Organizations (IUFRO), the Center for International Forest Research (CIFOR) and the European Forest Institute (EFI), as well as through the promotion and development of EU research projects and programs, some lessons can be drawn considering the possible role of scientists at the science-policy interface. Today, on the example of the global change - and especially the climatic changes that policy makers are demanding about-, most of the researches to be carried out have to answer social questions the solutions of which require the support of science. This is especially the case in the forestry field, which is characterized by the particularly long term of cycles and the great number of stakeholders interested in. Whilst decision making processes are complex systems, science is not the only source of knowledge useful for taking decisions, so that in a democratic context, research results have to be confronted to other lessons learnt (for instance from technical expertise, or from traditional knowledge) in order to get accountability in terms of instrumentation. In scientific terms, it should certainly lead to multi-disciplinary approaches of the multifunctionality of forest and related techniques to be implemented. But this does not mean that research activities have to be assessed only against their instrumentality. However, research and public decision-making are very contrasting spheres, where the principles and professional types of behavior are basically different. This situation calls for a need for a clear separation of the respective roles. In addition, all scientific developments should not be driven from practical needs of decision-makers, since theoretical questions may indirectly build up the future reality.

Keywords - Forest research, forest policy, decision-making, science/policy interface

Since the last 15 years, more attention has been paid in the scientific sphere to the quality of the message brought by the scientists to the policy makers. In the field of environment and forestry, the discussion on the impacts of global change has been determinant. Nowadays, it has become almost impossible either to justify a research program or to present research conclusions without referring to what it means in terms of public decisions to be taken. Science specialists speak to policy makers.

What science can tell

The experience of policy science

This evolution has been especially determinant in the research field of policy science, where since the last 10 years, a shift in topics to be addressed and concepts to be used has occurred. During the years 1980 and 1990, a focus was made on formulation and evaluation of national policies, through social studies and policy analysis. Since the last 15 years, this has been changed, shifting from policy aspects (what to do and why) to governance aspects (how to do it).

One of the effects of this shift is a progressive move from policy analysis as distant from the social questions, to an empirical positioning at the science/policy interface. Progressively policy scientists are even associated to some discussions and orientations of the policy and governance of the sector.

One example is the process of formulation of international criteria and indicators of governance. In support to donors and funding agencies which were giving the highest attention to governance issues, there was an urgent need to identify relevant tools for assessing and guiding their action in support to forestry development. In the early 2010s, an initiative of the World Bank has associated UN agencies and international scientific networks (EFI, CIFOR) in defining a framework for reviewing forest governance.

Another issue that has played a central role in promoting the importance on science/policy interface in the forest sector is the discussion on the orientations to be taken at the management and policy levels in order to take into consideration the possible impacts of global (both climatic and social) change. Scientists from different fields of research

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(especially climatology, ecology and sociology) have been clearly asked by the decision-making community to transfer their results in a way that could result in action. However in this case, the association between scientists and policy makers has been more difficult so far than in the previous example (because the disciplines retain concepts and theoretical schemes that are far from action, and because experts may have different views on the topic).

EFI and EU as drivers

In this important change, 2 international institutions have played the major role.

The European Union (EU) has become a key partner in orientating the research carried out in the member Countries. In some identified strategic domains (resilience to global change, biodiversity conservation, sustainable development, governance), the EU has defined principles for attributing its support which pay a major attention to the applicability of the results to be provided. Through this strategy, the EU intends to orientate the researches towards topics of high interest in terms of decision making. In some programs (such as the COST program), the association of stakeholders and decision makers is even stated as a condition for acceptance and funding of the research project proposals that are submitted.

A second international body which has actively contributed to the shift from academic research to science/policy interface is the European Forest Institute (EFI) that has clearly stated as one of its major objectives the provision to the deciders' community of concrete useful results. EFI has permanently reflected on the topics that were considered as hot spots, as well as it has discussed the approaches and techniques in order to reach the decision makers' community. In this framework, EFI has developed 2 types of publications: (i) the "*What science can tell us*" studies on various topics, eg. water and forest, European forest governance, living with storm damages in forests, or forest bio-energy in Europe; (ii) a series of policy briefs resulting from high level expertise developed in a think-tank named "ThinkForest" merging scientists and policy makers (especially European parliamentarians).

A result of this global interest is a re-definition of the norms of quality to be used as for evaluating researches and research institutes as well. In Europe but also in North America where the same move is observed, the best-ranked scientific teams are those who benefit from an important dotation, means those who aim at providing deciders with consistent tools for taking management and policy decisions.

The science/policy interface

This spectacular development of relations at the science/policy interface finds its basic determinants in:

- the restriction of public and private funds to research activities, which brings both policy deciders and academic institutions to select priorities (all cannot be done considering the global capacities);
- a need for funding agencies to prioritize researches that are able to bring results in as short term (in a period of economic crisis, the society has to solve urgent questions first).

Innovation in support to public decision

On one hand, the main role of science is to bring elements of knowledge that can be useful for the society, even if it is not necessary for direct immediate concrete actions. Knowing about a topic makes sense only if the gain obtained in culture or technique may allow a benefit in terms of welfare. From this viewpoint, knowing just for knowing makes no sense, so that as a conclusion, research activities need anyhow to justify what they bring to the society which is at the end the last level in assessing the scientific results.

In all cases, the scientific questions addressed by the research activities are a translation of the economic, social or cultural questions raised by the society. In a way of another, would they want or not, the scientists work in the framework of bringing innovations that will be used more or less directly by the society, and at the end they are supposed to support public decisions. In a democratic context, the question is not so much to ask whether a research should be policy oriented, but rather who defines what is useful (budgeting?, policy?) for the society, and consequently what is a useful research.

In most of the cases, the rationalist framework, where once needs to know before to act, is used as a reference: scientific knowledge is supposed to give the truth of laws derived from verified facts and figures; thus it is more considered as a justification for a decision than the other forms of knowledge (technical-empirical and traditional-locally based). A linear sequence characterizes the track form knowledge to decision, as a segmented path with specialized actors:

- the policy deciders allocate the budget to research;
- the senior management of research institutes defines research priorities;
- the labs organize the work to be done, do the job and disseminate the results towards the

scientific community;
- the extension structures test the results at larger and more concrete scale, and make necessary adjustments;
- the policy deciders receive more knowledge in order to take better decisions at the end, and finally ask new questions to research.

Up to now, very few attempts have been made to reconsider this linear deductive framework and consider a dynamic process of iterative interrelations between the science and policy spheres, retaining knowledge as a result from a process of permanent mutual learning, where various actors interact in producing what is called knowledge.

An important challenge in the future of the science-policy interface for the next years will be to re-consider the whole process of linking scientists' work, deciders' job and citizens' demands, through promoting a new systemic vision that is more conform to the reality, where the construction of knowledge comes from social interrelations.

What decision makers ask scientists

On the other hand, and as a general principle, it is also clear that policy makers are supposed to ask the research to respond concrete questions that they have, just because any type of decision needs to be taken basing on the most accurate information. Through the international dialogue on forest and environment developed since the beginning of the years 1990s, the idea has emerged that researchers should be included into the discussion community, with as a role to provide to decision makers the mast insights about the main issues raised. A strong hypothesis in the rationalist vision of decision making is to consider that deciders should decide basing on the best possible knowledge.

But this linear vision does not necessary correspond to the most common situation, whilst usually scientists are asked for in very different contexts:
- when something decided before has not worked so far, and that there is a need for a change that is not well mastered or that needs to be strongly justified (*eg.* the case of the industrial plantations facing problems of pests and difficulties in marketing);
- when the usual way to decide is made too much difficult in case of changing context and paradigms (*eg.* the case of climate change);
- when decisions are very hard to take, and thus comes the need for the decision makers to find an outsider as a possible "responsible" actor (*eg.* the case of re-definition of users' duties in a more inclusive management scheme).

In any of those cases, one result of the rationalist vision is certainly a pressure from the society, thus from the policy deciders, on the research to "find out" (result-oriented research) more than to "search for" (processed oriented research).

Making scientists and decision-makers working together

Research and decision: two different spheres

There is a difference of logic between social and scientific questions. Social demands, those raised by the decision makers for instance (usually after a first proper translation), address results, gains and concrete actions, so that basically short-term responses are expected. On the opposite, scientific questions relate to the rationale and the cognitive aspects, and deal with mechanisms, and that implies long-term involvement.

In addition, in most of the cases, translating social demands into research questions is not an easy task, for at least 2 reasons:
- first, social needs are changing over time, and many of them are contradictory, whilst they are expressed by stakeholders who compete for the solution;
- second, the translation into scientific terms uses different languages and concepts (wording, but also logic) related to various disciplines.

This may lead to two very different types of knowledge and two very different types of responses and solutions.

Science may bring doubt and complexity to the decision making process. It can complicate the issue, and thus make the solution more difficult or long to find. Science can also contest or deny the validity of present or previous decisions taken, even in the case when policy deciders do not ask scientists to address the related issues.

Opposite to this, decision-making needs a certain degree of certainty and simplicity (simplification). Deciders like science when it makes their action easier and more credible, or when it confirms their initial vision. At the end, they may look for science only in 2 very different types of situation (i) when they are already sure of the results (and they look for a validation from science), or at the opposite (ii) when they really do not know what to decide (and they look for science taking the responsibility of difficult choices instead of them).

Can scientists and decision-makers build-up knowledge together?

Although the discussion between scientists and

decision-makers may still be difficult, there are more and more situations where a constructive dialogue works.

This is especially the case as far as mutifunctional management/policy is concerned. Science is a very segmented sphere, whilst it works through various disciplines that use different concepts, approaches and methods. At the opposite, any decision-making process usually needs to integrate various aspects, involving different fields of research. Most of the success stories in working at the science-policy interface organize a constructive debate among scientists from different fields. The most successful examples are even those when scientists are able to build up a multi-disciplinary vision to be submitted to the decision-makers as the scientific knowledge.

Some guidelines come from experience, in order to promote a better dialogue between scientists and decision-makers:

- make scientific results visible to raise deciders' awareness and willingness to cooperate: the scientific message should be simple, modern, clear and concise (one idea only, in order to avoid from confusion); usually deciders react.
- take initiatives and propose conclusions directly to the deciders; when they see that scientists come by themselves to the social debate, deciders find interest in developing interactions that can be promising.
- develop multi- or even inter-disciplinary researches, in order to reach a common comprehensive speech, sometimes the only one audible by the decision-makers.

If scientists are part of the social construction of actions (they take part in the knowledge development system, through interactions with other stakeholders) and thus in a way may appear as acting as stakeholders in the decision making process, only the decision-makers are responsible for the actions taken and implemented. The scientists' role is just to bring to the discussion rigorous demonstrations. Otherwise, there still exists a risk of instrumentalization of science as an alibi by the deciders, against which scientists need to be guaranteed by a "free thinking" context and institutional framework.

Do scientists always need to respond decision makers?

The need to have scientists and decision-makers working together should not occult that in frequent cases scientists cannot or have not to respond directly the questions that they are asked for:

- there may be a need for more distance, for more abstraction or for a re-conceptualization, *eg.* in case of a lack of rigor of the social debate as it is developed, or in case of important changes in the context that make the question as formulated by the decision-makers irrelevant;
- sometimes an ethical questioning is absolutely needed;
- some results brought by science in specific conditions need to be tested in various contexts in order to be implementable, just because there is a great heterogeneity of space and time in all aspects dealing with the decision process (techniques, management, governance). Opposite for instance to physics, there exist no universal laws in management and policy sciences, as well as in social sciences in general, because solutions vary a lot from place to place and from time to time.

Whilst it can take more time than required by decision-makers who are under a strong pressure of time, many studies and experiments are usually required for a good response to the society. This is also why international cooperation in scientific studies is needed.

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